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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/747,600	12/29/2003	Hyuk Park	20063/OG03-037	6482
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34431 7590 11/23/2005

HANLEY, FLIGHT & ZIMMERMAN, LLC  
20 N. WACKER DRIVE  
SUITE 4220  
CHICAGO, IL 60606

EXAMINER

VU, DAVID

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/747,600

Applicant(s)

PARK ET AL.

Examiner

DAVID VU

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4 and 6-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 2-4 and 6-8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Prall et al. (US Pat. 6,624,024, herein after Prall) in view of Iranmanesh (US Pat. 5,514,900).

Regarding claims 3, 7 and 8, Prall discloses in figs. 3-5 a method of fabricating a memory cell and a memory cell structure comprising: forming a plurality of gate areas, the gate areas including a gate oxide 16, a floating gate 18, an insulating layer 20, and a control gate 22 (fig. 3 and col. 4, lines 56-61); forming spacers 48 on sidewalls of the gate areas to isolate and protect a gate area including a floating gate and a control gate (col. 5, lines 15-27); forming a silicon

nitride gap filling layer 50 over a substrate including the gate area and the spacers (fig. 5 and col. 5, lines 36-40); and depositing an insulating layer 52 over the gate areas and the gap filling layer (col. 5, lines 41-43).

Prall discloses a method of fabricating a memory cell and a memory cell structure as describe above but fails to disclose the gap filling layer is formed of undoped polysilicon or amorphous silicon. However, Iranmanesh teaches that nonconducting materials, such as silicon dioxide, undoped polysilicon, or silicon nitride could be used as the spacer materials (col. 5, lines 15-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Prall by forming the gap filling layer as taught by Iranmanesh since the material such as amorphous silicon, undoped polysilicon or silicon nitride is recognized equivalent material for forming the spacer in a method of manufacturing a semiconductor device.

Regarding claims 2 and 6, Prall discloses that the spacers 48 are formed by depositing and etching a SiN layer (col. 5, lines 15-27).

Regarding claim 4, Prall discloses that the insulating layer 52 is formed of BPSG (borophosphorsilicate glass) (col. 5, lines 41-43).

### **Response to Arguments**

2. Applicant's arguments filed 09/14/2005 have been fully considered but they are not persuasive. Claims 2-4 and 6-8 stand rejected.

Applicant argued that layer 50 of Prall is not a gap filling layer because the specification of the pending application (paragraph [0011]) teaches that:

[0011] Referring to FIG. 2b, a filling layer 24 is deposited over the gate areas and the spacers 20. Undoped polysilicon or amorphous silicon is used to form the filling layer 24. *Narrow gaps between the spacers 20 can be easily **filled up** without voids being created because both undoped polysilicon and amorphous silicon have an excellent gap filling characteristics.*

Or

“Consequently, as shown in FIG. 2d, the gaps between the gate areas are **completely filled with the filling layer 24** without any voids.” (Specification, paragraph [0013])

However, Prall discloses in fig. 5 a gap filling layer 50 at least substantially fills a gap. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the undoped polysilicon or amorphous silicon is used to form the filling layer 24 without voids being created) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, as shown in fig. 2b of the Applicant's specification, the gap filling layer 24 is a spacer form on sidewalls of the spacer 20. Therefore, applicant's argument that Prall's gap filling layer 50 fails to anticipate claims 3 and 7 is not persuasive.

### Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Vu

November 18, 2005